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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,323	04/21/2004	Toshio Sakai	252057US0DIV	4227
22850	7590	08/02/2005	EXAMINER DICKEY, THOMAS L	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			ART UNIT 2826	PAPER NUMBER

DATE MAILED: 08/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/828,323

Applicant(s)

SAKAI ET AL.

Examiner

Thomas L. Dickey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 8-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/21/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/446,905.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 04/21/04 6) ☐ Other:

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DETAILED ACTION

1. The preliminary amendment filed on 4/21/04 has been entered.

Oath/Declaration

2. The oath/declaration filed on 4/21/04 is acceptable.

Drawings

3. The formal drawings filed on 4/21/04 are acceptable.

Priority

4. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/446,905, filed on 05/08/1998.

Information Disclosure Statement

5. The Information Disclosure Statement filed on 4/21/04 has been considered.

Specification

6. The title of the invention is not descriptive. A new title such as "ORGANIC ELECTROLUMINESCENT DEVICE WITH PHENYLENEDIAMINE HOLE INJECTOR AND

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CUPC INTERMEDIARY" is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

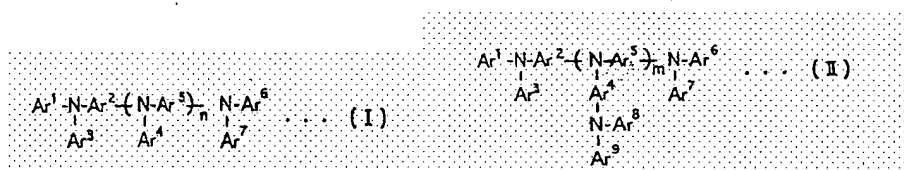
Claims 1,2 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over HOSOKAWA et al. (5,364,654) in view of IMAI ET AL. (5,374,489).

Example 18 of Hosokawa et al. discloses an organic electroluminescence element in which layers of CuPc (an intermediate layer), TPD (a hole injection layer) and DPVBi (a luminous layer) were formed, in that order, over an ITO anode, and a cathode comprising Mg:organic compound was formed over the luminous (DPVBi) layer. Note column 25 lines 20,30-32, and 34 of Hosokawa et al. Thus, Example 18 of Hosokawa et al. discloses an organic electroluminescence element comprising an anode and a cathode which are opposite to each other, and a hole injection layer (TPD) and a luminous (DPVBi) layer which are interposed between these anode and cathode, wherein an intermediate layer (CuPc) for inhibiting a reaction in an interface between the hole injection layer and the anode is formed of phthalocyanine-based compound (CuPc, copper phthalocyanine, note claim 8), between the hole injection layer and the anode,

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and said hole injection layer comprises TPD, which is an oligomer having a phenylenediamine structure comprising two amines and a bridging phenyl group and an ionization potential of said intermediate layer (CuPc) is larger than a work function of said (ITO) anode and smaller than an ionization potential of the oligomer (TPD) of said hole injection layer.

Hosokawa et al. does not disclose that the oligomer in the hole injection layer has a glass transition temperature of 110 degrees Celsius or more, or with regard to claim 2, that the work function of CuPc is less than the work function of the oligomer having a glass transition temperature of 110 degrees Celsius or more, or with regard to claims 10 and 11, that the phenylenediamine structure has either formula I or formula II

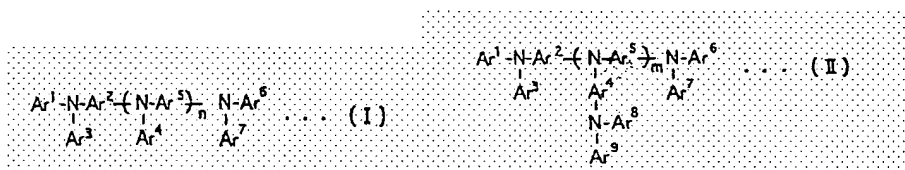


wherein n and m are each integers of 1 to 3, Ar¹ to Ar⁷, in formula I and Ar¹ to Ar⁹ in formula II each represent a carboxylic group having 6 to 30 carbon atoms, and at least one of Ar² and Ar⁷ in formula I or Ar², Ar⁴ and Ar⁵ in formula II is a phenylene group.

Note that Hosokawa et al. discloses a TPD hole injection layer. Some variants of the TPD oligomer are capable of producing a hole injection layer with a glass transition temperature above 110 degrees, some are not. Note, for example, the discussion in Imai et al.

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However, Imai et al. discloses an organic electroluminescence device with a hole injection layer 4 having a glass transition temperature of 110 degrees Celsius or more, said hole injection layer comprising an oligomer having a phenylenediamine structure of either formula I or formula II



wherein n and m are each integers of 1 to 3, Ar¹ to Ar⁷, in formula I and Ar¹ to Ar⁹ in formula II each represent a carbocyclic group having 6 to 30 carbon atoms, and at least one of Ar² and Ar⁷ in formula I or Ar², Ar⁴ and Ar⁵ in formula II is a phenylene group. Note fig. 3 and col. 9 lines 1-61 of Imai et al. Therefore, it would have been obvious to a person having skill in the art to replace the TPD hole injection layer of Hosokawa et al.'s OED with the hole injection layer having a glass transition temperature of 110 degrees Celsius comprising an oligomer having a phenylenediamine structure of the specified formulas such as taught by Imai et al. in order to provide a hole injection layer with a high heat-resistant property and high conductivity to improve durability and emit light at a high luminance and a high efficiency upon application of a low voltage.

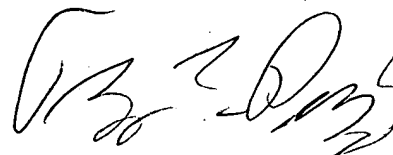
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thomas L. Dickey
Patent Examiner
Art Unit 2826
07/05